

VIII. ARGUMENTS

A. Claims 1 and 12-14

Claims 1-3 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pitt et al. U.S. 5,476,653 ("Pitt") or Mück et al. U.S. Patent U.S. Patent No. 5,994,455 ("Mück") each in view of Kosinski EP 448037 ("EP '037") and Chapman et al. U.S. Patent No. 3,656,982 ("Chapman").

The object of the applicant's claimed invention was to develop colored POM molding compositions in which the formaldehyde emission observed hitherto has been substantially reduced, in fact, the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 20 mg/kg, without impairing the known advantageous properties of POM. (see the specification at page 3, lines 22-25).

Pitt and Mück describe oxymethylene/oxyethylene copolymers. As the Examiner has recognized neither Pitt nor Mück described compositions that contain colorants (see the bottom of paragraph no. 8 in the bottom of page 2 of the Final Office Action). In addition, neither Pitt nor Mück disclose that the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 20 mg/kg (see independent claim 1). This limitation the Examiner has asserted is taught by both Pitt and Mück and the applicant respectfully disagrees.

The examiner argues that polyoxymethylene as described in Pitt et al. and Mück et al. possess a low level of formaldehyde emission, because said polyoxymethylenes are prepared in the presence of a strong protonic acid and/or a derivative of a strong protonic acid. In a second step, a colorant is added to these polyoxymethylenes to form a colored acid.

composition with a low formaldehyde emission level. However, it is important to understand that the addition of a colorant usually leads to an increased destruction of the polyoxymethylene and following to an increased emission of formaldehyde. In the state of the art, the increased formaldehyde emission is reduced by addition of N-containing compounds (see for example Kosinski). In view of the present invention it was unexpectedly found that such an increase of emitted formaldehyde occurred by adding a colorant can be avoided respectively reduced if the specific prepared polyoxymethylenes are used. So the argument of the examiner is to simple that only a polyoxymethylene with a low emission level of formaldehyde is used to prepare a colored polyoxymethylene composition which shows also a low formaldehyde emission. In contrast thereto it was not obvious that the colored, specific prepared polyoxymethylenes shows a reasonable lower increase of formaldehyde emission compared with other polyoxymethylenes prepared with other methods after coloration.

The oxymethylene/oxyethylene copolymers can be prepared with several alternative initiators (e.g. with Lewis acids, see Mück column 1 lines 35-39). There is no evidence in Pitt nor Mück that copolymers containing oxymethylene and oxyethylene units and a colorant (pigment) leads to an increased formaldehyde emission and that this emission can be reduced by mixing specific prepared copolymers (with a strong protonic acid) with the colorant (pigment). For example, the preparation of the copolymers with Lewis acids (described in Mück) leads to a higher formaldehyde emission (see e.g., the present application, in particular the comparative examples, wherein the copolymer is prepared with BF_3 (page 8 line 1, results page 10 table 1)).

In the state of the art the use of N-containing stabilizers are known to increase e.g. light or melt stability (e.g. Kosinski, see page 6, line 4-19). Surprisingly, oxymethylene-oxyethylene copolymers prepared with a specific method (with strong protonic acids as initiator) leads to a low formaldehyde emission level if a colorant is added. There is NO indication in Mück, Kosinski nor Chapman that this specific combination (oxymethylene-oxyethylene copolymers in accordance with claim 1 and a colorant) to get colored copolymers results in a low emission level of formaldehyde, in particular, formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 20 mg/kg.

The oxymethylene-oxyethylene copolymers described in Pitt are used as carrier for biological active factors e.g. for medicines. Because of the harmful effects for patients of an increased formaldehyde emission an addition of a colorant would be problematic, so nobody would combine polyoxymethylene-polyoxyethylene carriers for pharmaceutical use with colorants.

Kosinski describes polyacetal compositions which can comprise 12 different other ingredients which include colorants / pigments (page 12 lines 46-51). At page 12, Kosinski discloses

“...other ingredients, modifiers and additives as are generally used in polyacetal molding resins, including [1] thermal stabilizers, [2] anti-oxidants, [3] pigments, [4] colorants, [5] toughening agents, [6] reinforcing agents, [7] UV stabilizers, [8] hindered amine stabilizers, [9] nucleating agents, [10] lubricants, [11] glass fibers, and [12] fillers. It should also be understood that some pigments and colorants can, themselves, adversely

affect the stability of polyacetal compositions.”¹ (emphasis added)

Therefore, there is a selection required by the Examiner to selectively take colorants / pigments from the other ingredients. The Examiner has not supplied the proper motivation for this selection, especially in view of the last statement that “some pigments and colorants can, themselves, adversely affect the stability of polyacetal compositions”.

The increased formaldehyde emission of colored oxymethylene/oxyethylene copolymers is not discussed nor are corresponding polymer compositions explicitly described in the examples. In contrast to the present application, Kosinski describes mixtures of the polymer with hindered amines as light stabilizer as necessary limitation. Further a person of ordinary skill in the art couldn't find any evidence in Pitt, Mück or Kosinski to prepare copolymers containing oxymethylene and oxyethylene units mixed with a colorant (pigment), wherein the copolymer is prepared with a strong protonic acid to reduce the formaldehyde emission of the resulting colored copolymer compound.

Chapman describes only some pearlescent pigments for cosmetically usage (e.g. abstract). Under the heading of Description Of the Preferred Embodiments, Chapman states:

“The present invention is particularly useful and beneficial in conjunction with pearlescent pigments which are to be incorporated in compressed cosmetic powders.” (emphasis added)

There are no compositions described in Chapman which encompasses oxymethylene/oxyethylene copolymers. In addition, there is no indication given which

¹ The numbers were added by the applicant to emphasize that amount of selection required.

kind of oxymethylene/oxyethylene copolymers has to be used for the reduction of the formaldehyde emission raised through the mixture of said copolymer with a colorant (pigment). The applicant does not believe that Chapman is related to the applicant's claimed invention or for that matter is combinable with the other references applied against the claims.

The Examiner must consider the references as a whole, In re Yates, 211 USPQ 1149 (CCPA 1981). The Examiner cannot selectively pick and choose from the disclosed multitude of parameters without any direction as to the particular one selection of the reference without proper motivation. The mere fact that the prior art may be modified to reflect features of the claimed invention does not make modification, and hence claimed invention, obvious unless the prior art suggested the desirability of such modification is suggested by the prior art (In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984); In re Baird, 29 USPQ 2d 1550 (CAFC 1994) and In re Fritch, 23 USPQ 2nd. 1780 (Fed. Cir. 1992)). In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) (in a determination under 35 U.S.C. § 103 it is impermissible to simply engage in a hindsight reconstruction of the claimed invention; the references themselves must provide some teaching whereby the applicant's combination would have been obvious); In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) (under 35 U.S.C. § 103, both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure). The applicants disagree with the Examiner why one skilled in the art with the knowledge of the references would selectively modify the references in order to arrive at the

applicants' claimed invention. The Examiner's argument is clearly based on hindsight reconstruction.

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting this combination, although it may have been obvious to try various combinations of teachings of the prior art references to achieve the applicant's claimed invention, such evidence does not establish *prima facie* case of obviousness (*In re Geiger*, 2 USPQ 2d. 1276 (Fed. Cir. 1987)). There would be no reason for one skilled in the art to combine Mück or Pitt each in view of Kosinski and Chapman.

B. Claim 2

Claim 2 further limits claim 1 and requires that the molding composition comprises from 0.1 to 3.0% by weight of colorants selected from the group consisting of white pigments, black pigments, and color pigments. As stated above, the Examiner recognized that neither Pitt nor Mück mentions the colorants of claims 2 and 3 (see the bottom of page 2 of the Final Office Action).

The Examiner states also at the bottom of page 2 of the Final Office Action, that Kosinski discloses the use of other useful ingredients including pigments, colorants, stabilizers etc. However, as stated above, Kosinski discloses:

"...other ingredients, modifiers and additives as are generally used in polyacetal molding resins, including [1] thermal stabilizers, [2] anti-oxidants, [3] pigments, [4] colorants, [5] toughening agents, [6] reinforcing agents, [7] UV stabilizers, [8] hindered amine stabilizers, [9] nucleating agents, [10] lubricants, [11] glass fibers, and [12] fillers. It should also be understood that some pigments and colorants can, themselves, adversely

affect the stability of polyacetal compositions.”² (emphasis added)

Therefore, there is a selection required by the Examiner to selectively take colorants / pigments from the other ingredients. The Examiner has not supplied the proper motivation for this selection, especially in view of the last statement that “some pigments and colorants can, themselves, adversely affect the stability of polyacetal compositions”. The Examiner has relied upon Chapman for the applicant’s claimed amount. However, as stated above, the applicant does not believe that Chapman is combinable reference because Chapman is related to a different field of art, in particular, Chapman relates to pearlescent pigments which are to be incorporated in compressed cosmetic powders.

C. Claim 3

Claim 3 further limits claim 2 and further requires the colorants carry a coating of an alkali metal salt of a fatty acid having at least 12 carbon atoms. The Examiner is correct that Chapman shows this feature, but as stated above, the applicant does not believe that one of ordinary skill in the colored molding composition made from polyacetal copolymer art would not rely upon Chapman as an applicable reference. The other references the Examiner relies upon do not show this claimed feature.

D. Claim 11

Claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over Pitt in view of Kosinski and Chapman as applied to claim 1 and further in view of Yokoyama. The Examiner has recognized that Kosinski and Chapman do not teach the feature of

² The numbers were added by the applicant to emphasize that amount of selection required.

claim 11 that the polyacetal copolymer comprises from 0.1 to 10 mol% of oxyethylene units. The Examiner has relied upon Yokoyama for this teaching.

It is acknowledged that the Examiner has correctly stated that Yokoyama does disclose:

For example, when the polyacetal resin is an oxymethylene-oxyethylene copolymer containing oxyethylene groups in an amount of from 1.5 to 7.0 mol %, preferably from 1.7 to 7.0 mol %, based on the molar total of the oxymethylene units, the polyacetal resin has a relatively low melting temperature. Also, the polyacetal resin can have a relatively low melting temperature when the polyacetal resin is an oxymethylene-oxypropylene copolymer containing oxypropylene groups in an amount of from 1.2 to 5.6 mol %, based on the molar total of the oxymethylene units, or is an oxymethylene-oxybutylene copolymer containing oxybutylene groups in an amount of from 0.9 to 4.3 mol %, based on the molar total of the oxymethylene units.

However, the applicant does not believe that Yokoyama teaches the applicant's claimed invention. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting this combination, although it may have been obvious to try various combinations of teachings of the prior art references to achieve the applicant's claimed invention, such evidence does not establish *prima facie* case of obviousness (*In re Geiger*, 2 USPQ 2d. 1276 (Fed. Cir. 1987)). There would be no reason for one skilled in the art to combine Muck or Pitt each in view of Kosinski, Chapman and Yokoyama.

E. Claims 15, 19, 21 and 23

In addition to the arguments presented for claim 1 above, Claim 15 is narrower than claim 1, with respect to the following features:

- (1) the initiator is very specific, trifluoromethanesulfonic acid and/or a derivative of trifluoromethanesulfonic acid,
- (2) the colorant is specific and is selected from the group consisting of white pigments, black pigments and color pigments.

Again, as stated above, Pitt nor Mück mention colorants. The Examiner has relied upon Kosinski for disclosing colorants in a long list of 12 optional ingredients. However, Kosinski does not disclose nor teach that the colorants are selected from the group consisting of white pigments, black pigments and color pigments.

With respect to the trifluoromethanesulfonic acid, it is recognized that Pitt does disclose trifluoromethanesulfonic acid as a catalyst but not an initiator as is claimed by the applicant (see col. 7, lines 15-19). Therefore, this group of claims is further removed from the prior art.

F. Claims 16 and 24

Claim 16 further limits claim 15 and requires that the molding composition comprises from 0.1 to 3.0% by weight of colorants selected from the group consisting of white pigments, black pigments, and color pigments. As stated above, the Examiner recognized that neither Pitt nor Mück mention the colorants of claims 2 and 3 (see the bottom of page 2 of the Final Office Action).

The Examiner states also at the bottom of page 2 of the Final Office Action, that Kosinski discloses the use of other useful ingredients including pigments, colorants, stabilizers etc.

However, as stated above, Kosinski discloses 12 optional ingredients which include colorants/pigments. Therefore, there is a selection required by the Examiner to selectively take colorants / pigments from the other ingredients. The Examiner has not supplied the proper motivation for this selection, especially in view of the last statement that "some pigments and colorants can, themselves, adversely affect the stability of polyacetal compositions".

The Examiner has relied upon Chapman for the applicant's claimed amount. However, as stated above, the applicant does not believe that Chapman is combinable reference because Chapman is related to a different field of art, in particular, in conjunction with pearlescent pigments which are to be incorporated in compressed cosmetic powders. The applicant's claimed amount is not taught in Kosinski.

Claim 24 depends upon claim 16 and has all the limitations of claim 16. Claim 24 would be patentable for at least the same reasons as claim 16.

G. Claim 17

Claim 17 further limits claim 16 and further requires the colorants carry a coating of an alkali metal salt of a fatty acid having at least 12 carbon atoms. The Examiner is correct that Chapman shows this feature, but as stated above, the applicant does not believe that one of ordinary skill in the colored molding composition made from polyacetal copolymer art would not rely upon Chapman as an applicable reference. The other references the Examiner do not teach this limitation.

H. Claim 18

Claim 18 further limits claim 15. The Examiner has recognized that Kosinski and Chapman do not teach the feature of claim 18 that the polyacetal copolymer comprises from 0.1 to 10 mol% of oxyethylene units. The Examiner has relied upon Yokoyama for this teaching.

It is acknowledged that the Examiner has correctly stated that Yokoyama does disclose:

For example, when the polyacetal resin is an oxymethylene-oxyethylene copolymer containing oxyethylene groups in an amount of from 1.5 to 7.0 mol %, preferably from 1.7 to 7.0 mol %, based on the molar total of the oxymethylene units, the polyacetal resin has a relatively low melting temperature. Also, the polyacetal resin can have a relatively low melting temperature when the polyacetal resin is an oxymethylene-oxypropylene copolymer containing oxypropylene groups in an amount of from 1.2 to 5.6 mol %, based on the molar total of the oxymethylene units, or is an oxymethylene-oxybutylene copolymer containing oxybutylene groups in an amount of from 0.9 to 4.3 mol %, based on the molar total of the oxymethylene units.

However, the applicant does not believe that Yokoyama teaches the applicant's claimed invention. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting this combination, although it may have been obvious to try various combinations of teachings of the prior art references to achieve the applicant's claimed invention, such evidence does not establish *prima facie* case of obviousness (*In re Geiger*, 2 USPQ 2d. 1276 (Fed.

Cir. 1987)). There would be no reason for one skilled in the art to combine Mück or Pitt each in view of Kosinski, Chapman and Yokoyama.

L. Claim 22

Claim 22 is dependent from claim 16 and has all the features of claim 16 (requires that the molding composition comprises from 0.1 to 3.0% by weight of colorants selected from the group consisting of white pigments, black pigments, and color pigments) and further requires that the polyacetal copolymer comprises from 1.0 to 2.5 mol% of oxyethylene units. The Examiner has relied upon the combination of Mück or Pitt each in view of Kosinski, Chapman and Yokoyama to reject this claim.

The Examiner has relied upon Chapman for the applicant's claimed amount of pigments. However, as stated above for claim 16, the applicant does not believe that Chapman is combinable reference because Chapman is related to a different field of art, in particular, in conjunction with pearlescent pigments which are to be incorporated in compressed cosmetic powders. The applicant's claimed amount is not taught in Kosinski or Yokoyama. As stated above for claim 18, there would be no reason for one skilled in the art to combine Mück or Pitt each in view of Kosinski, Chapman and Yokoyama.

J. Claims 25 and 26

Claim 25 is a process claim directed for reducing the formaldehyde emission of colored molding compositions made from polyacetal copolymer. None of the references teach reducing formaldehyde emissions. The Examiner has inserted that this is inherent

and the applicant respectfully disagrees. In addition, this group of claims requires the specific colorant selected from the group consisting of white pigments, black pigments, and color pigments. As stated above, the Examiner has relied upon Chapman for this teaching but Chapman is not believed to be combinable because it is directed to a non-analogous art.

As stated above, there would be no reason for one skilled in the art to combine Mück or Pitt each in view of Kosinski, Chapman and Yokoyama.

Claim 26 is dependent upon claim 25 and would be patentable for at least the same reasons claim 25 is patentable.

It is believed that the claims define an invention which is new, useful, and unobvious. For the above reasons, the applicants request passage to allowance. This brief is being submitted in triplicate. The PTO is authorized to charge Deposit Account No. 03-2775 the amount of \$500.00. The Notice of Appeal was filed on June 15, 2005. It is believed that no extensions are required.

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However, in the event that the undersigned is mistaken in his calculations, an appropriate extension of time to respond is respectfully petitioned for, and the Commissioner is hereby authorized to charge the account of the undersigned attorneys, Patent Office Deposit Account No. 03-2775, for any fees which may be due upon the filing of this paper.

Respectfully submitted,

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APPENDIX I

1. A colored molding composition made from polyacetal copolymer, wherein the polyacetal copolymer consisting essentially of oxymethylene units and oxyethylene units, and strong protonic acid and/or a derivative of a strong protonic acid was used as initiator during preparation of the polyacetal copolymer, and a colorant, and the emission of formaldehyde from the colored molding composition is lower than from a molding composition for which the polyacetal copolymer was prepared using a Lewis acid as initiator and wherein the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 20 mg/kg.
2. The molding composition as claimed in claim 1, which comprises from 0.1 to 3.0% by weight of colorants selected from the group consisting of white pigments, black pigments, and color pigments.
3. The molding composition as claimed in claim 2, wherein the colorants carry a coating of an alkali metal salt of a fatty acid having at least 12 carbon atoms.

4-10 cancelled

11. The molding composition as claimed in claim 1, wherein the polyacetal copolymer comprises from 0.1 to 10 mol% of oxyethylene units.
12. The molding composition as claimed in claim 1, wherein the formaldehyde emission, determined on test specimens in accordance with the German

Automotive Industry Recommendation No. 275 (VDA 275), is not more than 60% of the formaldehyde emission of a colored molding composition for which the polyacetal copolymer was prepared using BF_3 as the initiator.

13. cancelled
14. The molding composition as claimed in claim 1, which further comprises from 0.1 to 10% by weight of stabilizers and auxiliaries.
15. A process to prepare a molding composition which comprises preparing a polyacetal copolymer which consisting essentially of oxymethylene units and oxyethylene units, using trifluoromethanesulfonic acid and/or a derivative of trifluoromethanesulfonic acid as an initiator, mixing the polyacetal copolymer with at least one colorant selected from the group consisting of white pigments, black pigments and color pigments, and obtaining a colored polyacetal molding composition whose emission of formaldehyde is lower than from a molding composition for which the polyacetal copolymer was prepared using a Lewis acid as an initiator and wherein the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 20 mg/kg.
16. The process as claimed in claim 15, wherein said colorant is in an amount from 0.1 to 3.0% by weight.
17. The process as claimed in claim 16, wherein the colorant carries a coating of an alkali metal salt of a fatty acid having at least 12 carbon atoms.

18. The process as claimed in claim 15, wherein the polyacetal copolymer comprises from 0.1 to 10 mol% of oxyethylene units.
19. The process as claimed in claim 15, wherein the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 60% of the formaldehyde emission of a colored molding composition for which the polyacetal copolymer was prepared using BF_3 as initiator.
20. cancelled
21. The process as claimed in claim 15, which further comprises from 0.1 to 10% by weight of stabilizers and auxiliaries.
22. The process as claimed in claim 16, wherein the polyacetal copolymer comprises from 1.0 to 2.5 mol% of oxyethylene units.
23. The process as claimed in claim 15, wherein the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is not more than 50% of the formaldehyde emission of a colored molding composition for which the polyacetal copolymer was prepared using BF_3 as the initiator.
24. The process as claimed in claim 16, wherein the formaldehyde emission, determined on test specimens in accordance with the German Automotive Industry Recommendation No. 275 (VDA 275), is less than 10 mg/kg.

25. A process for reducing the formaldehyde emission of colored molding compositions made from polyacetal copolymer, which comprises preparing a polyacetal copolymer consisting essentially of oxymethylene units and oxyethylene units, using trifluoromethanesulfonic acid and/or a derivative of trifluoromethanesulfonic acid as an initiator, mixing the polyacetal copolymer with at least one colorant selected from the group consisting of white pigments, black pigments and color pigments, and obtaining a colored polyacetal molding composition whose emission of formaldehyde is lower than from a molding composition for which the polyacetal copolymer was prepared using a Lewis acid as initiator.
26. The process as claimed in claim 25, wherein when the initiator is added in a solvent.